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Docket No. CRX.106XC1

Serial No. 10/662,492

Remarks

Claims 1-5, 10, 11, 13-20, 25, 26, 28, and 35-40 were pending in the subject application. By this Amendment, claims 1, 17, 35, and 37 have been amended. No new matter has been introduced. Support for the amendments and new claims can be found throughout the original specification and claims (see, for example, page 3, lines 30-31). Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 1-5, 10, 11, 13-20, 25, 26, 28, and 35-40 remain before the Examiner.

The amendments to the claims have been made in an effort to lend greater clarity to the claimed subject matter and to expedite prosecution. These amendments should not be taken to indicate the applicant's agreement with, or acquiescence to, the rejections of record. Favorable consideration of the claims now presented, in view of the remarks and amendments set forth herein, is earnestly solicited.

Claims 37-40 have been rejected under 35 U.S.C. §102(b) as being anticipated by Gillespie *et al.* (U.S. Patent No. 5,783,503) in view of Tortora (*Understanding Textiles*). The applicant respectfully traverses this ground for rejection because the cited reference does not teach each and every element of the claimed invention.

Claim 37 is drawn to a method of reducing the static level of a spunbond process having a static level measured at the outlet of a slot attenuation device of greater than 2 kilovolt per inch or less than -2 kilovolt per inch. The method comprises adding at least one antistatic agent to a melt blend of the spunbond process, before extruding the melt blend, in an amount sufficient such that the static level measured at about one half inch below the outlet of the slot attenuation device is between -2 kilovolt per inch and 2 kilovolt per inch.

The Action states in the paragraph bridging pages 2 and 3 that Gillespie would necessarily teach the claimed "results" of having a static level measured at about one half inch below the slot attenuation device of -2 to 2 kilovolt per inch "principally because Gillespie teaches each of the claimed process steps." The applicant respectfully disagrees. The claimed method requires the step of adding at least one antistatic agent to a melt blend in an amount sufficient such that the static level is in the claimed range. Gillespie includes no disclosure of adding any component as an antistatic agent and, even assuming for the sake of argument, that

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nylon is an antistatic agent, there is plainly no contemplation in Gillespie of adding it in an amount sufficient to lead to the claimed static level range. Thus, Gillespie fails to disclose all of the claimed method steps and would not necessarily have the claimed static level.

Moreover, the Action cites nylon or polyester as an antistatic agent, but the applicant does not necessarily agree that this is the case. Submitted herewith is a Declaration Under 37 C.F.R. §1.132 of Albert E. Ortega (hereinafter referred to as "the Ortega Declaration"). The Action cites nylon and polyester as antistatic agents because of their moisture regain. However, as discussed in paragraph 3 of the Ortega Declaration, it is not necessarily the case that addition of nylon or polyester has an antistatic effect. Thus, nylon and polyester are not necessarily antistatic agents as the Action alleges.

In addition, the claimed method is for reducing the static level of a spunbond process having a static level measured at the outlet of a slot attenuation device of greater than 2 kilovolt per inch or less than -2 kilovolt per inch. Gillespie includes no discussion of static levels at the outlet of a slot attenuation device, so it is not even completely clear that this initial limitation is met. Claims 38-40 include further limitations on the static level that are not contemplated by Gillespie.

As the Examiner is aware, it is a basic premise of patent law that in order to anticipate, a single reference must disclose within the four corners of the document each and every element and limitation contained in the rejected claim. *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991). As discussed above, Gillespie, even when considered in conjunction with the teachings of Tortora, fails to disclose certain elements of the claimed method. For example, there is no teaching of adding at least one antistatic agent to a melt blend in an amount sufficient such that the static level is in the claimed range.

Accordingly, the applicant respectfully requests reconsideration and withdrawal of the rejection of claims 37-40 under §102.

Claims 1-5, 13-15, 17-20, 25, 26, and 35-40 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Gillespie *et al.* (U.S. Patent No. 5,783,503) in view of Tortora (*Understanding Textiles*). The applicant respectfully traverses this ground for rejection

because the cited references, taken either alone or in combination, do not teach or suggest the claimed invention.

The Action states at pages 3-4 that Gillespie teaches addition of an antistatic agent by disclosing that nylon or polyester can be used. The Action also asserts at page 5 that Gillespie in view of Tortora would necessarily teach the claimed result of reducing the static level because Gillespie teaches each of the claimed process steps. However, as discussed above with respect to the rejection under §102, the claims require that at least one antistatic agent is added to a melt blend in an amount sufficient such that the static level is in the claimed range. There is no teaching or suggestion of this step in the cited references.

Moreover, regarding the limitation in independent claims 1, 17, and 35 that the filaments of the web are bonded at a temperature of between 180 °C and about 250 °C, the applicant submits that this element is not taught or suggested in the combination of cited references. As discussed in paragraph 4 of the Ortega Declaration, the melting point of polyolefins is much lower than that of nylon. Polyolefin fabric, as in the type used in Gillespie, would completely melt if a bonding temperature of between 180°C and about 250°C were used. This point is emphasized in Gillespie (column 8, lines 40-52) and in U.S. Patent Application Publication No. 2003/0181112, a copy of which is attached hereto for the Examiner's convenience. Thus, a polyolefin fabric would completely melt, potentially destroying the spunbonding equipment, if a bonding temperature of between 180 °C and about 250 °C were used. A skilled artisan would not have found a reason to use such a bonding temperature with the Gillespie process. The applicant notes that the Action at page 4 once again refers to the incorrect statement of Tortora that "spunbonding is necessarily done by bonding the filaments while they [are] partially molten." As discussed in the Amendments filed June 17, 2010 and November 6, 2009 and the Declarations of Dr. Billie Collier and Mr. Albert Ortega filed November 6, 2009, cooling, drawing, and depositing takes place between the extrusion and the bonding. Thus, a skilled artisan would readily understand that bonding does not necessarily take place at the same temperature as extrusion, and therefore, Gillespie's high extrusion temperatures are not necessarily used for bonding.

Additionally, the Action at page 5 refers to Tortora's bicomponent fibers containing metal or carbon as antistatic agents and asserts that it would have been obvious to include these in the Gillespie process in order to control electrical properties (referring to column 5, lines 35-42 of Gillespie) and because Gillespie teaches producing a desired product by combining polymers in the melt blend. However, as discussed by the applicant in previous Amendments, a very high amount of carbon black is required to see any appreciable antistatic effect (see, e.g., Amendment of April 24, 2008 and U.S. Patent Nos. 2,845,962 and 5,277,855 submitted with that Amendment). Also, as discussed in paragraph 1 of Mr. Ortega's previous Declaration filed October 12, 2007, it is well-known in the art that using carbon black in the melt stream of a polymer, especially in high proportions, would severely plug filters and packs. The amount of carbon black or metal that would be required to be present in the melt in order to be sufficient to reduce a static level as claimed would be so high that a skilled artisan would not have had a reasonable expectation of success in being able to complete the process (especially the extruding).

In order to emphasize this point, independent claims 1, 17, 35, and 37 have each been amended to require that the antistatic agent does not cause a defect in the fabric being produced. A skilled artisan would understand from the original specification that the described method of producing a spunbonded nonwoven fabric, including the addition of an antistatic agent to the melt blend, does not cause any defects in the fabric (see, e.g., paragraph 2 of the Ortega Declaration and page 3, lines 30-31 of the specification). As discussed in paragraph 1 of the Ortega Declaration submitted herewith, using bicomponent fibers containing metal or carbon in a spunbond process is very expensive, plugs filters and packs, and changes the natural color of the fabric being produced. If metal or carbon were used as an antistatic agent in a spunbond process, the unintended consequence of changing the color would be considered by a skilled artisan as causing a defect in the spunbonded fabric. In addition, the high amount of metal and/or carbon that would be required to be added in order to reduce the static level measured at about one half inch below the outlet of the slot attenuation device from greater than 2 kilovolt per inch or less than -2 kilovolt per inch to between -2 kilovolt per inch and 2

kilovolt per inch would significantly change the natural color of the spunbonded fabric being produced.

Furthermore, as discussed in paragraphs 5 and 6 of the Ortega Declaration, Gillespie's comments regarding controlling electrical properties are not related to minimizing static issues but rather producing a splittable filament. Gillespie teaches that "[a] triboelectric charge can be developed in the filaments to promote separation... [a] nylon component can develop such a static charge... (and) [a]n external electric field can be applied to the filaments... to augment the separation" (column 9, lines 53-63). Thus, addition to the melt blend, in the Gillespie process, of additives that would lower the static level at the outlet of an attenuation device would inhibit separation of the filaments, in direct contrast to the goal of the Gillespie process (see, e.g., paragraph 6 of the Ortega Declaration). A proposed modification cannot render (purported) prior art unsatisfactory for its intended purpose or change the principle of operation of a reference. MPEP §2143.01(V and VI).

In addition, with regard to claim 3, the Action states at page 6 that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to select nylon 6 as the nylon to use in Gillespie in order to have greater tenacity." However, as discussed in paragraph 7 of the Ortega Declaration, although nylon 6 has greater yarn tenacity, it is not necessarily true that nylon 6 has greater fabric tenacity. Fabric tensile strength is a function of many things and is not limited to just yarn tenacity. The bond area of the calender, the calender temperature and pressure, and the line speed are just a few of the variables that impact fabric strength. Thus, a skilled artisan would not necessarily have found it obvious to choose nylon 6 in order to have greater tenacity. The applicant has attached hereto an article (Fedorova *et al.*, Strength Optimization of Thermally Bonded Spunbond Nonwovens, 2007) that discusses strength optimization of thermally bonded spunbond nonwovens as a reference.

As discussed above, the combination of cited references fails to teach or suggest the claimed method, including adding at least one antistatic agent to a melt blend in an amount sufficient such that the static level is in the claimed range. Also, a skilled artisan would not have found a reason to bond at the claimed temperature range as such high temperatures would cause the polyolefins to melt, potentially ruining the process equipment. In addition, the

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bicomponent fibers of Tortora would not be used as antistatic agents because they would cause multiple problems, including color defects.

Accordingly, the applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-5, 13-15, 17-20, 25, 26, and 35-40 under 35 U.S.C. §103(a) based on Gillespie in view of Tortora.

Claims 1-5, 10, 11, 13-20, 25, 26, 28, and 35-40 have been under 35 U.S.C. §103(a) as being unpatentable over Gillespie *et al.* in view of Tortora, and in further view of either Warburton (U.S. Patent No. 4,081,383) or George (U.S. Patent No. 4,167,464). The applicant respectfully traverses this ground for rejection because the cited references, taken either alone or in combination, do not teach or suggest the claimed invention.

The Action states that Gillespie teaches to incorporate into the polymer melt components to control electrical properties, citing column 5, lines 35-42. However, as discussed in paragraphs 5 and 6 of the Ortega Declaration, Gillespie is primarily concerned with producing splittable filaments (see, e.g., column 5, lines 38-39), and the only additives to control electrical properties contemplated by Gillespie are those that might increase static buildup at the outlet of an attenuation device. As Gillespie teaches at column 9, lines 53-63, “[a] triboelectric charge can be developed in the filaments to promote separation... [a] nylon component can develop such a static charge... (and) [a]n external electric field can be applied to the filaments... to augment the separation” (emphasis added). Thus, Gillespie teaches away from any additives that would lower the static level at the outlet of an attenuation device since that would inhibit separation of the filaments, in direct contrast to the goal of the Gillespie process.

The Action also asserts that it would have been obvious to use the copolymer composition of Warburton *et al.* in the extrusion of Gillespie in order to provide the product with better anti-soiling properties and to control the anti-soiling treatment’s polymer particle size. Warburton *et al.* disclose an aqueous dispersion (column 1, lines 45-47), including a polymeric material, as an anti-soiling treatment for carpets and carpet yarns. A skilled artisan would recognize that addition of water, such as with the aqueous dispersion of Warburton *et al.*, into an extruder would cause problems since it could lead to depolymerization of polymers

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typically used in melt blends. Also, a skilled artisan would not have been motivated to use any individual components of the aqueous dispersion of Warburton to attempt to impart anti-soiling properties to any fabric; rather the entire dispersion (including the water), would be used, as taught by Warburton.

Moreover, as discussed in the November 2009 Ortega Declaration, since the aqueous dispersion of Warburton is applied directly to carpets and/or carpet yarns, a skilled artisan would not have had a reasonable expectation of success that the addition of this dispersion to a melt blend (before extrusion, quenching, drawing, web formation, and bonding), would impart any anti-soiling properties to a spunbonded nonwoven fabric like it does when applied directly to a carpet or carpet yarn. Nor would a skilled artisan have expected any other advantageous properties of Warburton's aqueous dispersion (intended for direct application to carpets and/or carpet yarns), such as any possible reduction in static build-up (column 6, lines 34-37), to be imparted to a spunbonded nonwoven fabric, when added to a melt blend (before extrusion, quenching, drawing, web formation, and bonding). Any component added to a melt blend will be subjected to high temperatures, so it would not be expected that the same properties would be imparted as in the case when Warburton's aqueous dispersion is applied directly to a carpet and/or carpet yarn. It would only make sense to apply the aqueous dispersion of Warburton *et al.* to the finished fabric of Gillespie since then a skilled artisan could ensure that the Warburton dispersion would retain its properties (even though it's not clear if such properties would even be imparted to a spunbonded fabric). The applicant notes that the claims require actually bonding the filaments at a temperature between 180 °C and 250 °C.

With respect to George, the Action asserts that it would have been obvious to include George's copolymer composition in the extrusion of Gillespie in order to provide the product with better absorption of water and other bodily fluids. However, the highest temperature any of the compounds in George is subjected to is about 50 °C (column 7, lines 64-65). A skilled artisan would not have reasonably expected any advantageous properties of George's interpolymer (only subjected to low temperatures), including water absorbency, to be imparted to a spunbonded nonwoven fabric when added to a melt blend (before extrusion, quenching, drawing, web formation, and bonding). Any component added to a melt blend will be

subjected to high temperatures (much higher than 50 °C), so it would not be expected that the same properties would be imparted after melting the interpolymer and mixing with several other components in a melt blend. It would only make sense to apply the film coating of George to the finished fabric of Gillespie since then a skilled artisan could ensure that the George compound would retain its properties (even though it's not clear if such properties would even be imparted to a spunbonded fabric). The applicant notes that the claims require actually bonding the filaments at a temperature between 180 °C and 250 °C.

Furthermore, George discloses the preparation of water absorbent films and fibers by photopolymerizing various compounds. As discussed in the November 2009 Ortega Declaration, all of the films and fibers of George contain water (column 7, line 45 through column 8, line 10; Tables 1 and 2). A skilled artisan would recognize that addition of water into an extruder would cause problems since it could cause depolymerization of polymers typically used in melt blends. Additionally, a skilled artisan would not have been motivated to use any individual components of the George composition to attempt to impart water absorbency properties to any fabric; rather the entire composition (including the water) would be used, as taught by George.

As discussed above, a skilled artisan would not have had a reason to include, or a reasonable expectation of success in doing so, any of the substances taught by Warburton *et al.* or George in the melt blend of Gillespie. Even assuming for the sake of argument, that one of these substances was actually included in Gillespie's melt blend, absent the applicant's disclosure, there would have been no reason to include such a substance in an amount sufficient to give a reduction in the static level as claimed.

Accordingly, the applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a) based on Gillespie *et al.* in view of Tortora and in further view of either Warburton or George.

In view of the foregoing remarks, the applicant believes that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

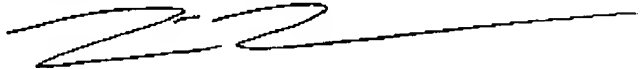
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The applicant also invites the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



Louis C. Frank
Patent Attorney
Registration No. 60,034
Phone: 352-375-8100
Fax No.: 352-372-5800
Address: P.O. Box 142950
Gainesville, FL 32614-2950

LCF/la

Attachments: Petition and Fee for Extension of Time

Declaration Under 37 C.F.R. §1.132 of Albert E. Ortega

U.S. Patent Application Publication No. 2003/0181112

Fedorova *et al.* article

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